I:Beaglehole and Beaglehole E-5 (1934-5)1938 Pukapukans



782
244
482

replanted, and the corms themselves buried in the ground and left for the gods. The workers place the corms in their baskets which they carry to the village balanced on their heads (*taku ki luuga o te ulu*).

242
731

There is no rotation of talo with other plants nor any system for leaving lands fallow between planting. At the time of greatest famine after the seismic wave, cultivation was alternated between reserve land and private talo beds to ensure that each bed of talo was put to best use and that the corms were allowed to mature properly.

244
415
314

Cultivation further consists in weeding (*laugai i te vayavaya ai*) and fertilizing (*wakalapo* or *tilikao*) the talo beds:

> The gardens are weeded by women about once each month during the early stages of growth. Weeds are tramped into the soil or allowed to rot on top. When six or seven leaves are fully unfurled, the beds are fertilized with *pukuma* leaves, *luu kotawa* fern, grasses, coconut leaves, or any other vegetable matter. The fern leaves are cut off at the base of the plant and wrapped for transport in coconut-leaf mats (*polapola*). All the subsidiary branches are cut from the *pukuma* tree, and the leaves stripped by hand from each branch and placed in baskets. The branches are replanted or dried and used as firewood, canoe poles, etc. The vegetable matter is taken to the garden and spread over the ground around each talo plant. Some is tramped in, but the larger vegetable matter is allowed to rot on top. This is mainly women's work, but the men sometimes assist, especially in the cutting down of the *pukuma* branches. Normally there are about two crops of talo from each bed during each twelve-month period. This means fertilizing each year about two months after each planting.

241
192

In the old days a little dryland talo (*kape*) was cultivated. Killed by the tidal wave, it has not been replanted.

At least eighteen stages in the growth of talo or *pulaka* are recognized:

Taki te tiapapala: the cutting is planted.
Fe lau, kua tupu te aka o te weuwi: ist day, the roots grow.
Fe lahi, kua vaka te lau: 3d day, the young leaves begin to protrude from the base of the innermost petiole.
Fe lima, kua lua te lau o te kau: 5th day, the young leaves grow tall.
Fe ongonoa, kua vaka te lau weuwi: 10th day, new petioles and leaves shoot up.
Tuupau ake, kua kau lua: the next day, there are two petioles and leaves.
Kua vaka anai te taku o te lau: (15th day) the third petiole and leaf shoot up.
Kua kau tolu: (20th day) there are now three petioles well grown.
Kua kau wa: (21st day) there are four petioles. This is the time to substitute and fertilize the young talo.
Kua kau lima: (25th day) there are five petioles growing.
Kua wakaiwangawili: (30th day) the leaves sway freely in the wind.
Kua tauhi te kau lima, kua vaa, kua tupu anai ake te kau lua, kua ono lau tolu, kua ake: (35th day) petioles spread and darken in color, the leaf grows large, there are six main leaves, the plant flourishes.
Kua atuuto ki luuga: (40th day) the petioles grow high.
Kua ake kau ki luuga: (45th day) the petioles grow high indeed.
Kua tuhoa te uhi: (1st month) the head is full, the petioles and leaves stop growing, and the corm begins to grow.
Kua matapo te weuwi: (3d month) the corm is five finger-joints long.
Oho ki te vevenga o te weuwi: (4th and 5th months) the time when the corm grows rapidly.
Kua lahi, kua mamaha: (6th and 7th months) the corm is mature and large.

12Beaglehole and Beaglehole E-5 (1934-5)1938 Pukapukans



341 on one side of the roof, the other midrib on the other side. Where the roof
154 is low, leaflets at the butt end of each midrib are carried under the eaves
335 and tied to a thatch rafter. Where the roof is high, the weight of the midribs is sufficient to hold down the roof securely. A number of these double midrib slings are placed at intervals along the roof for added protection.

[177] House thatching with pandanus leaves was introduced into Pukapuka by missionaries from Rarotonga. The method in use conforms in every particular to the Aitutaki method (26, pp. 11-24):

314 Pandanus leaves are collected in the reserves, and straightened (*vao kaunoa* or
322 *pepalo kaunoa*) by passing them around an upright stick (*takau vao kaunoa*). The
285 leaves are then fastened in bundles (*pekei kaunoa*) by placing the tip end of each leaf over the butt end and tying the ends of a number of leaves together. The leaves are bent over and sewn to strips of wood split from the aerial roots of the pandanus. A sewing needle (*tui*) is used to split the longitudinal grain of the pandanus leaves so that the coconut leaf midribs (*tuaniu*) may be inserted to keep the leaves in position on the wooden strip. The completed roof sheet is termed *pola kaunoa*.

## Framework Construction

341 Pandanus wood is used almost exclusively in the framework of the
386 *wakayanua* type house. Formerly the wall posts were buried about 12 inches in the ground, but in a modern house of this type, four ground posts are supported on low, grooved coral stones and the wall posts are fitted to these ground posts by mortise and tenon joints. In the modern house the tendency is also to fit together tiebeams, wall and roof plates with mortise and tenon joints, but in the old house this would have required much labor with shell adzes. Hence only the tops of the wall posts were grooved (*wakaulo fou*) to receive the wall plates, the heads of the rafters chipped out (*wakaiola*) to fit against the ridgepole, and roof plates grooved (*wakaheua*) to fit against the tiebeams. If it is necessary to leave a house framework unthatched for several days all the principal posts are wrapped with coconut-leaf mats (*takapau*), and rafters are covered with a few coconut midribs, to protect the timbers from rotting or warping in sun or rain.

## Wall Mats

341 In old houses of the *wakayanua* type, walls are made with coconut-leaf
285 mats (*takapau*). Mats are made long enough to overlap two wall poles, the depth of plaiting for each mat being about 12 inches. In a typical house, four mats form a set between each pair of wall poles. The mats are supported at their upper, middle edges by two or three cocnut cords spaced equidistantly between the two edges. The method of support is the same as the thatch method (27, pp. 73-74, fig. 79). The mats operate on a Venu-

1:Beaglehole and Beaglehole E-5 (1934-5)1938 Pukapukans



| Bowl Name | Longest Diameter | Shortest Diameter | Depth | Remarks |
|---|---|---|---|---|
| —(1) | 25" | 15½" | 7" | No lugs. |
| —(2) | 17" | 11" | 4" | Right lug plain, bored with hole to facilitate hanging. Left lug conventional phallic symbol. (See fig. 13*d*). |
| Pisao | 6' 7" | 2' | 12¼" | Each lug 9" long and carved into realistic phallus. Bowl holds 1000 talo corms. Two food mixers accompanying this bowl are of ngangie wood, each 23½" long and 2½" diameter at pounding base. |
| Pakumaiona | 4' 5" | 1' 9" | 12" | Lugs plain, 11½" long and 3" diameter in cross section. Bottom shaped like a turtle back (tua wonu) and propped with stones when in use. Holds 400 corms. |
| Ela | 6' 4" | 1' 3" | 10¾" | Lugs plain, 11" long, 4" by 3" in cross section. Turtle-backed. Holds 1000 corms. |

Large coconut shells in which to cook talo are set aside whenever they are available. The cook always tells a person about to open a large coconut to crack it with care and put aside the shell when he has drunk the liquid and scooped out the flesh. Shells are thrown away after being used once as cooking utensils.

## PLAITING

Plaited articles of coconut leaf or pandanus material are still in common use in Pukapuka. Among these articles are plaited roof sheets and wall screens, floor and sleeping mats, and articles used for transporting, storing, and serving foods. Formerly plaited articles were used also for everyday and ceremonial dress.

In the following brief description of Pukapukan plaited articles, the terminology used is that established by Buck (27, pp. 164-168).

### Pandanus Material

Pandanus trees are not cultivated to provide material for mat making. Plaiting material prepared from the leaves (lau) of the wala variety is termed *lito*, and from the yulu variety, *lauwalu*.

The method of preparing *lito* material is as follows:

A woman collects green pandanus leaves from trees in the reserves and brings them back to the village. While the fire she has made of dry coconut midribs and burns to burning, she takes each leaf and slices off (today with a knife, formerly with a sharp

1:Beaglehole and Beaglehole E-5 (1934-5)1938 Pukapukans



shell), the longitudinal ridge (*tua iti*) on its back (*hoo yiyi te tua o te lito*). The back of the leaf is termed *tua*, the front, *aloalo* or *vakevake*. When the fire has burned down to red embers, the worker passes the leaves in bundles of about 10 back and forward over the embers for about 1½ minutes or until the leaves are thoroughly warm (*hoo lalo te lito hi longa o te auri*). Some women heat the leaves over the embers before stripping off the back ridge. She next cuts off the narrow ends of the leaves so that the width of each leaf is fairly uniform throughout.

The next process is bleaching (*vakomumuha te lito*). The leaves are spread on the ground in the sun, gathered in at sundown each day, and spread again the next day, for several days.

Next the leaf is made smooth (*yoyalo te lito hi te nguipu*). The worker takes the butt of the leaf in her left hand, the rest of the leaf in the right hand in which she holds a dry half coconut shell. She presses the outer surface of the shell against the leaf surface and draws the leaf through her right hand. This smooths the leaf, which has become curled and twisted in bleaching.

She strips off the spikes of the leaf (*yiyi te mata tala*) by biting a commencement with her teeth at the butt of the leaf, then inserting the thumb nail in the slit, and running it longitudinally down each side of the leaf. She smooths the leaf (*yapini te lito*) a second time by winding it round the fingers of the left hand, back (*tua*) side inward, at the same time stretching the leaf until it is as smooth and wide as possible.

The final process is making the leaves into bundles (*pohai*) by winding one leaf on top of another until a flat, round bundle about 12 inches in diameter results. The completed bundle is fastened with a strip of pandanus and the material is now ready for plaiting.

Like *lito*, *loumilu* leaves are first heated over the fire and bleached in the sun. The process then is as follows:

The spikes are trimmed off (*yiyi loo na mata tala*). Next, each leaf is split transversely and longitudinally. The two leaf strips are soaked in the sea. Each leaf in a bundle of leaves is tied with a single overhand knot to a common midrib which is soaked into the sea bottom of shallow water so that the leaves are covered at low tide. After soaking for two to three weeks, both front and back strips of the leaf provide a stiff material (*loubie*) used for mats; the two strips of the leaf, soaked for four weeks or longer, give a soft, flexible material (*hie mate*) used for plaiting mattes. When removed from the sea, the leaves are washed in fresh water (*vahonongalo i te yua*). They are then dried in the shade (*hoou loo tuma he pukapuka i loto o te vaale*), and smoothed (*yapini*) by winding around the hand. The leaves are bleached a second time in the sun (*hoou loo vahala he vaamaha*) and rolled into large bundles (*pohai*).

A third preparation of pandanus leaves, termed *loumalo pukapuka*, is easily prepared to provide a strong material for some designs. Dry pandanus leaves are collected from the ground beneath the trees, the spines are removed, and the leaves smoothed and rolled into bundles.

MATS

The technical processes in the plaiting of Pukapukan mats correspond exactly to the Samoan technique for plaiting *papa* and *fala* mats (27, pp. 214-321). Plaiting elements are either single (*longa tai*) as in plaiting thick materials or material where a soft finish is desired, or double (*longa lua*) treated singly as in plaiting thin material (*lito*) which is to be sturdy and long-wear-